



Cami McKinney
Timp Cave National Monument
RR3 Box 200
American Fork, UT 84003
TEL: (801) 756-5661

RE: AF River WQ

Dear Cami McKinney:

Lab Set ID: 1608206

3440 South 700 West
Salt Lake City, UT 84119

Phone: (801) 263-8686
Toll Free: (888) 263-8686
Fax: (801) 263-8687
e-mail: awal@awal-labs.com
web: www.awal-labs.com

American West Analytical Laboratories received sample(s) on 8/10/2016 for the analyses presented in the following report.

American West Analytical Laboratories (AWAL) is accredited by The National Environmental Laboratory Accreditation Program (NELAP) in Utah and Texas; and is state accredited in Colorado, Idaho, New Mexico, Wyoming, and Missouri.

All analyses were performed in accordance to the NELAP protocols unless noted otherwise. Accreditation scope documents are available upon request. If you have any questions or concerns regarding this report please feel free to call.

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitation limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit. Analytical results are reported to three significant figures for quality control and calculation purposes.

Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer

Thank You,

Approved by: _____
Laboratory Director or designee



INORGANIC ANALYTICAL REPORT

Client: Timp Cave National Monument
Project: AF River WQ
Lab Sample ID: 1608206-001
Client Sample ID: AF River - American Fork River
Collection Date: 8/9/2016 1630h
Received Date: 8/10/2016 952h

Contact: Cami McKinney

Analytical Results

TOTAL METALS

Compound	Units	Date Prepared	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
Arsenic	mg/L	8/10/2016 1350h	8/11/2016 2107h	E200.8	0.00200	< 0.00200	
Calcium	mg/L	8/10/2016 1350h	8/18/2016 1428h	E200.7	5.00	63.0	
Lead	mg/L	8/10/2016 1350h	8/11/2016 2107h	E200.8	0.00200	< 0.00200	
Magnesium	mg/L	8/10/2016 1350h	8/18/2016 1426h	E200.7	1.00	18.2	
Mercury	mg/L	8/15/2016 1315h	8/16/2016 948h	E245.1	0.000150	< 0.000150	
Potassium	mg/L	8/10/2016 1350h	8/18/2016 1426h	E200.7	1.00	< 1.00	
Sodium	mg/L	8/10/2016 1350h	8/18/2016 1426h	E200.7	1.00	4.77	
Zinc	mg/L	8/10/2016 1350h	8/11/2016 2107h	E200.8	0.00500	< 0.00500	

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Analytical Results

Compound	Units	Date Prepared	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
Acidity (as CaCO ₃)	mg/L		8/11/2016 1000h	SM2310B	15.0	< 15.0	
Bicarbonate (as CaCO ₃)	mg/L		8/11/2016 930h	SM2320B	10.0	149	
Carbonate (as CaCO ₃)	mg/L		8/11/2016 930h	SM2320B	10.0	< 10.0	
Chloride	mg/L		8/18/2016 1429h	E300.0	1.00	6.71	
Nitrate/Nitrite (as N)	mg/L		8/10/2016 1102h	E353.2	0.0100	0.303	
Sulfate	mg/L		8/18/2016 1429h	E300.0	7.50	77.9	
Total Dissolved Solids	mg/L		8/11/2016 1210h	SM2540C	20.0	232	
Total Suspended Solids	mg/L		8/10/2016 1452h	SM2540D	3.00	3.60	

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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

WORK ORDER Summary

Work Order: **1608206**

Page 1 of 1

Client: Timp Cave National Monument

Due Date: 8/24/2016


Client ID: TIM200

Contact: Cami McKinney

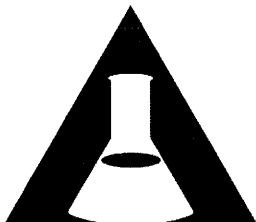
Project: AF River WQ

QC Level: I

WO Type: Standard



Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage	
1608206-001A	AF River - American Fork River	8/9/2016 1630h	8/10/2016 0952h	200.7-W	Aqueous		DF-Metals	4
				4 SEL Analytes: CA MG K NA				
				200.7-W-PR			DF-Metals	
				200.8-W			DF-Metals	
				3 SEL Analytes: AS PB ZN				
				200.8-W-PR			DF-Metals	
				HG-DW-245.1			DF-Metals	
				HG-DW-PR			DF-Metals	
1608206-001B				TDS-W-2540C			DF-tss/tds	1
				TSS-W-2540D			DF-tss/tds	
1608206-001C				300.0-W			DF-WC	
				2 SEL Analytes: CL SO4				
				ACIDITY-W-2310B			DF-WC	
				ALK-W-2320B			DF-WC	
				2 SEL Analytes: ALKB ALKC				
1608206-001D				NO2/NO3-W-353.2			DF-NO2/NO3	2



**American West
Analytical Laboratories**

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CHAIN OF CUSTODY

All analysis will be conducted using NELAP accredited methods and all data will be reported using AWAL's standard analyte lists and reporting limits (PQL) unless specifically requested otherwise on this Chain of Custody and/or attached documentation.

1608206

AWAL Lab Sample Set #
Page of

Due Date:

8/24

Laboratory Use Only

Samples Were:

- 1 Shipped or hand delivered
- 2 Ambient or Chilled
- 3 Temperature 5.2 °C
- 4 Received Broken/Leaking (Improperly Sealed)
Y N
- 5 Properly Preserved
Y N Checked at bench
- 6 Received Within Holding Times
Y N

COC Tape Was:

- 1 Present on Outer Package
Y N NA
- 2 Unbroken on Outer Package
Y N NA
- 3 Present on Sample
Y N NA
- 4 Unbroken on Sample
Y N NA

Discrepancies Between Sample Labels and COC Record?
Y N

QA Level:

1 2 2+ 3 3+

Turn Around Time:

1 2 3 4 5 Std

Unless other arrangements have been made, signed reports will be emailed by
5:00 pm on the day they are due.

- ☐ Report down to the MDL
☐ Include EDD:
☐ Lab Filter for:

☐ Field Filtered For:

For Compliance With:

- ☐ NELAP
☐ RCRA
☐ CWA
☐ SDWA
☐ ELAP / A2LA
☐ NLLAP
☐ Non-Compliance
☐ Other:

Known Hazards
&
Sample Comments

of Containers

Sample Matrix

Lead/Arsenic/Zinc/
Cadmium - Metals Analysis (4)
TDS/TSS Analysis
Anions - Carbonate, chloride, sulfate

Client: NPS - Timpanogos Cave
Address: RR 3 Box 200
American Fork UT 84003
Contact: Camie McKinney
Phone #: 801-692-5048 Cell #:
Email: Camie.McKinney@nps.gov
Project Name: A F River WQ
Project #:
PO #:
Sampler Name: Nathaniel Gilbert

Sample ID:	Date Sampled	Time Sampled	# of Containers	Sample Matrix	QA Level	Turn Around Time	Known Hazards & Sample Comments
1 AF River - American Fork River	8-9-16	16:30	8	W	2	Std	
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Relinquished by: Signature: <u>Nathaniel Gilbert</u>	Date: <u>8/10/16</u>	Received by: Signature: <u>Camie McKinney</u>	Date: <u>8/15/16</u>
Print Name: <u>Nathaniel Gilbert</u>	Time: <u>9:52</u>	Print Name: <u>Camie McKinney</u>	Time: <u>9:52</u>
Relinquished by: Signature:	Date:	Received by: Signature:	Date:
Print Name:	Time:	Print Name:	Time:
Relinquished by: Signature:	Date:	Received by: Signature:	Date:
Print Name:	Time:	Print Name:	Time:
Relinquished by: Signature:	Date:	Received by: Signature:	Date:
Print Name:	Time:	Print Name:	Time:

Special Instructions:

Lab Set ID: 1608206 / pH Lot 5003

Samples Were:		COC Tape Was:		Container Type:		No. Rec.	
<input type="checkbox"/> Shipped By:		Present on Outer Package		<input type="checkbox"/> AWAL Supplied Plastic			
<input checked="" type="checkbox"/> Hand Delivered		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> AWAL Supplied Clear Glass			
<input type="checkbox"/> Ambient		Unbroken on Outer package		<input type="checkbox"/> AWAL Supplied Amber Glass			
<input checked="" type="checkbox"/> Chilled		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> AWAL Supplied VOA/TOC/TOX Vials			
Temperature <u>5.2</u> °C		Present on Sample		<input type="checkbox"/> Amber <input type="checkbox"/> Clear <input type="checkbox"/> Headspace <input type="checkbox"/> No Headspace			
Rec. Broken/Leaking <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> Non AWAL Supplied Container			
Notes:		Unbroken on Sample		Notes: <u>8/10/16</u> <u>ul</u>			
Properly Preserved <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A					
Notes:		Notes:					
Rec. Within Hold <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							
Notes:				Discrepancies Between Labels and COC <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
				Notes:			

Bottle Type	Preservative	All pHs OK	1														
Ammonia	pH <2 H ₂ SO ₄																
COD	pH <2 H ₂ SO ₄																
Cyanide	PH >12 NaOH																
Metals	pH <2 HNO ₃		<u>Yes</u>														
NO ₂ & NO ₃	pH <2 H ₂ SO ₄		<u>Yes</u>														
Nutrients	pH <2 H ₂ SO ₄																
O & G	pH <2 HCL																
Phenols	pH <2 H ₂ SO ₄																
Sulfide	pH > 9NaOH, ZnAC																
TKN	pH <2 H ₂ SO ₄																
TOC	pH <2 H ₃ PO ₄																
T PO ₄	pH <2 H ₂ SO ₄																
TPH	pH <2 HCL																

- Procedure:
- 1) Pour a small amount of sample in the sample lid
 - 2) Pour sample from Lid gently over wide range pH paper
 - 3) Do Not dip the pH paper in the sample bottle or lid
 - 4) If sample is not preserved properly list its extension and receiving pH in the appropriate column above
 - 5) Flag COC and notify client for further instructions
 - 6) Place client conversation on COC
 - 7) Samples may be adjusted at client request